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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/614,545	07/07/2003	Markus Schmidt	DE920000065US1	5854
7590 08/27/2004				
TIFFANY L. TOWNSEND		EXAMINER		
2070 ROUTE 52		NGUYEN, THANH T		
HOPEWELL JUNCTION, NY 12533				
		ART UNIT	PAPER NUMBER	
		2813		

DATE MAILED: 08/27/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/614,545

Applicant(s)

SCHMIDT, MARKUS

Examiner

Thanh T. Nguyen

Art Unit

2813

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) none is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 5-8 is/are rejected.
- 7) ☒ Claim(s) 4 and 9-15 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 7/7/03.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

## **DETAILED ACTION**

### ***Priority***

Acknowledgment is made of applicant's claim for priority under 35 U.S.C. 119(a)-(d) based upon an application filed in Germany on 1/8/01. A claim for priority under 35 U.S.C. 119(a)-(d) cannot be based on said application, since the United States application was filed more than twelve months thereafter.

### ***Information Disclosure Statement***

The information disclosure statement filed 7/7/03 has been considered.

### ***Oath/Declaration***

Oath/Declaration filed on 7/7/03 has been considered.

### ***Specification***

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim 2 is objected to because of the following informalities: there is a typographical error in claim 2, the term "froms" should be replace with "forms". Appropriate correction is required.

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Claim 3 is objected to because of the following informalities: there is a typographical error in claim 3, the term "poymerization" should be replace with "polymerization". Appropriate correction is required.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-3, 5, 8 are rejected under 35 U.S.C. 102(e) as being anticipated by Yates et al. (U.S. Publication No. 2003/0203508).

A method for the manufacture of microstructures comprising the steps of:

photolithographically producing at least one trench (26), said trench having at least two substantially vertical and at least one substantially vertical sides (see figures 2a, paragraph# 25+); and

forming polymer brushes (38, see paragraph# 27+) by polymer grafting techniques on the inner surface of said at least one trench, the forming comprising the steps of:

a) adsorbing a polymerization initiator (ozone) on said inner surfaces (see figure 2b, paragraph# 31); and

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b) polymerizing said inner surfaces (by UV, see paragraph# 31).

Regarding to claim 2. The method according to claim 1, wherein said polymer brushes are formed by a member selected from the group consisting of grafting to techniques and graphing forms technique (see figure 2b, making the surface not smooth).

Regarding to claim 3. The method according to claim 1 wherein said polymerization initiator is capable of binding to functional OH-groups (see paragraph# 32, 37) ozone bond to polymer).

Regarding to claim 5, The method according to claim 1 further comprising an oxidic layer bonded to the at least two substantially vertical surfaces of the photoresist, said polymer chains bonded to the oxidic layer (22, insulative, BPSG).

Regarding to claim 8. The method according to claim 1 wherein said polymerization initiator is coated onto the vertical walls of said trench (see figure 2b, paragraph# 31+) .

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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Claim 6-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yates et al. (U.S. Publication No. 2003/0203508) as applied to claims 1-3, 5, 8 above.

Yates et al. teaches a method of manufacturing a microstructure as described in the claimed invention above. However, none of the prior art teaches the aspect ratio of the microstructure.

It would have been obvious to a person of ordinary skill in the requisite art at the time of the invention was made to optimize the aspect ratio of the microstructure, since it has been held that where the general conditions of a claim are disclosed in the prior art (i.e. aspect ratio of the microstructure), discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233 (CCPA 1955).

The specification contains no disclosure of either the critical nature of the claimed arrangement (i.e. - aspect ratio of the microstructure) or any unexpected results arising therefrom. Where patentability is said to be based upon particular chosen limitations or upon another variable recited in a claim, the applicant must show that the chosen limitations are critical. In re Woodruff, 919 F.2d 1575, 1578 (FED. Cir. 1990).

Therefore, one of ordinary skill in the requisite art at the time the invention was made would have used any aspect ratio range suitable to the method in process of Yates et al. in order to optimize the process.

#### ***Allowable Subject Matter***

Claims 4, 9-15 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim

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and any intervening claims. None of the prior art teaches the subset of polymerization initiator is azomono-chlorosilane and applying a layer of a monomer, starting a polymerization process of the monomer, the polymerization process forming polymer chains, wherein at least some of the polymer chains bond to the vertical walls of the trench structure, removing the free polymer chains not bonded to the vertical walls, forming a metallic structure, and removing the remaining photoresist structure.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thanh Nguyen whose telephone number is (571) 272-1695, or by Email via address Thanh.Nguyen@uspto.gov. The examiner can normally be reached on Monday-Thursday from 6:00AM to 3:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead, Jr., can be reached on (571) 272-1702. The fax phone number for this Group is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0956 (See **MPEP 203.08**).



Thanh Nguyen  
Patent Examiner  
Patent Examining Group 2800

TTN